

IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES



REPORT
ON THE
AGRICULTURAL DEPARTMENT
ANTIGUA,
1924.

ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1925

[Price Sixpence.]



REPORTS

ON THE

BOTANIC STATION ECONOMIC PLOTS, AND AGRICULTURAL EDUCATION, ANTIGUA

Annual Reports on Certain Economic Experiments conducted in connection with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1921-22.

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LETTER OF TRANSMITTAL

The Commissioner of Agriculture—To the Colonial Secretary, Antigua.

A. 1922.

Trinidad,

23rd October, 1925.

Sir,

I have the honour to forward herewith the Annual Report for the year ending March 31, 1924, of the Antigua Botanic and Experiment Stations.

2. The Report has been prepared under some difficulty as Mr. Harcourt was absent on leave during a large portion of the year and has subsequently been transferred to Dominica.

3. The Report contains a record of steady work maintained under exceptional difficulties on the lines of previous years. There do not appear to be under the circumstances any outstanding points requiring special comment.

I have, &c.,

(Sgd). H. M. LEAKE,

Commissioner of Agriculture
for the West Indies.

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STAFF OF THE AGRICULTURAL DEPARTMENT ANTIGUA 1923-24.

Agricultural Superintendent	...	...	F. G. HARCOURT, F.R.H.S.
Land Officer & Agricultural Instructor	...	...	H. G. BELL.
1st Assistant for Agricultural Experiments	...	...	A. C. THOMPSON.
2nd Assistant for Agricultural Experiments	...	...	H. A. HALL.
Clerk	...	...	MISS G. EDWARDS.

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REPORT ON THE BOTANIC AND EXPERIMENT STATIONS, ANTIGUA,

For the Year ended March 31, 1924.

Work in the Botanic Gardens and Observations on Plants.

Owing to the hot and dry weather experienced, no improvements of consequence were attempted during the year. This season of drought is the fourth in succession experienced and very little water was obtainable at the gardens for the watering of plants. All the adjacent ponds were dry for the greater part of the year and the municipal water supply had to be reserved for domestic purposes.

Trees of *Pithecolobium saman*, which form an avenue at the west of the Botanic Station have been severely hit by the continued drought and it is doubtful if they will survive another dry season.

Efforts were made to save as many specimen plants as possible by the application of leaf mulches, which were in the main successful as very few plants died, but practically all showed the effect of the unfavourable conditions.

Towards the end of the year light showers were experienced and the flower beds, planted with Zinnias, French Marigolds and Cosmos, were soon a mass of colour.

The feature of the gardens is the hedge of *Plumbago capensis*, which withstood the drought remarkably well and periodically displayed a mass of bloom.

Work in the Nurseries and Distribution of Plants

Large stocks of economic and decorative plants were propagated to meet local demands, which, however, was not so great as the previous year.

MATERIAL FOR PLANTING.

About 1,500 mango plants, zabricot and calabash varieties, were raised for planting on government lands and for general distribution.

An attempt was made to raise seedling canes, but the young plants succumbed to the dry weather on being planted out in the cane nursery.

DISTRIBUTION OF PLANTING MATERIAL.

PLANTS AND SEEDLINGS.

Onion	...	...	...	14,800
Casuarina	...	...	...	411
Flamboyante	...	...	...	74
Eucalyptus	...	...	...	48
Agave	...	...	...	56
Cassia	...	...	...	33
Economic	...	...	...	151

CUTTINGS

Sugar Cane	...	...	...	3,500
Elephant Grass	...	...	...	7,775
Guatemala Grass	...	...	...	96
Aralia	...	...	...	220
Sweet Potato	...	...	...	20,000

SEEDS.

Onion seed	...	...	...	424 $\frac{3}{4}$ lb.
Castor seed	...	...	...	167 lb.
Black eye Pea	...	...	...	783 lb.
Vegetable seeds	...	...	...	290 pkts.
Flower seeds	...	...	...	37 pkts.

Onion plants were raised for distribution to peasant growers and others who had not the facility for raising them.

Owing to the discovery of mosaic disease in the sugar cane nurseries there was no sale of cane cuttings. The crop from the nurseries was sold to the Antigua Sugar Factory Ltd. and realized the sum of £25. The few cuttings distributed were Jamaica and Trinidad Uba.

The demand still continued for cuttings of Elephant Grass (*Pennisetum purpureum*) and there is now a considerable acreage planted throughout the Island. sweet potato cuttings were distributed free of charge to allottees of Government lands.

Decorative plants are on exhibition in the conservatory in order that people may select such plants as they require.

Mango plants distributed were of the following varieties; Zabricot, Pere Louis, Calabash and Julie.

The onion seed was imported from Teneriffe and, as in former years, the department acted as the distributing centre for the Leeward Islands.

There was a falling off in the sale of vegetable seeds, being undoubtedly due to the dry weather experienced.

EXPORTS AND PLANT IMPORTATIONS.

AGRICULTURAL EXPORT.

The following table shows the agricultural products exported from the island during the year 1924.

Article.	Quantity.	Value. £
Sugar (Grey and Yellow crystals) ...	6919 tons	152,218
Sugar (White) ...	163 "	3,586
Sugar (Muscovado) ...	4 "	88
Molasses (Vacuum Pan) ...	351,140 gallons	4,390
Molasses (Muscovado) ...	8,580 "	537
Cotton ...	750 lb	66
Tamarinds ...	1,036½ barrels	323
Lime Juice (concentrated) ...	640 gallons	—
Green Limes ...	55 barrels	39
Onions ...	860 crates	562
Pine-Apples ...	8 barrels	10
Oranges ...	to the value of	10
Vegetables ...	" " " "	11
Hides and Skins ...	" " " "	621
Turtle Shells ...	" " " "	80
<i>Live Stock:—</i>		
Horses ...	34 Head	291
Donkeys ...	149 "	236
Cattle ...	1 "	15
Sheep and Goats ...	5 "	2

PLANT AND SEED IMPORTATION.

A large number of fruit trees were imported from the agricultural departments in Trinidad, Grenada, St. Lucia and Dominica for purpose of planting up government lands in the vicinity of Fiennes wells and the Fisher and Fienne reservoir. These plants are all established and have made good growth.

The department is indebted to the undermentioned sources for seeds and plants presented:—

Agricultural Department Trinidad.	Oreodoxa regia, Cassia javanica, C. multi-juga, C. Linnaei, Mimosaops Telengi, amarindus indica. (Seeds).
Agricultural Department St. Kitts.	Casuarina plants.
Agricultural Department Montserrat.	Castor seed.
U. S. Department of Agriculture.	Barouni and Mission Olives, (Seeds and cuttings).
University of California, Berkeley.	Cuttings of Chemlali, Mission, Manzanillo, Santa Catarina, and Ascolano Olives.
Superintendent of Agriculture for the Leeward Islands.	Collection of miscellaneous seeds.

Plot Experiments at the Skerretts Experiment Station.

YAMS.

The area planted with yams in Antigua was not as great as in previous years, unfavourable weather conditions being responsible.

PLOT EXPERIMENTS.

Planters, as well as peasants, are showing an interest in the growing of this crop as it forms a staple food for all classes of the community when in season.

Small plots of the best varieties are grown by the department for the purpose of supplying planting material to growers.

The following table gives the varieties maintained and their respective yields. The yields obtained are very small and not up to the average and in no way indicate the true cropping value under more favourable conditions.

Variety.	*Rods planted	Return in lb.
Seal Top ...	9	100
Bottle Neck Lisbon	9	100
Oriental ...	9	105
Antigua Cush Cush	9	37
Crop ...	9	100
Danish ...	9	100
Lisbon ..	9	46
Light Red ...	9	70

*Local Rod=10 feet.

EDDOES AND TANNIAS.

This crop is regarded as an unreliable one in Antigua and in consequence of uncertain returns it is seldom that the quantity grown is sufficient to meet local demand. The following varieties were grown for the purpose of supplying planting material for distribution :

Tannia Roliza, Tannia Islena, Tannia Priete, Tannia White, Tannia Yellow, Red Eddoe, White Eddoe.

All the varieties suffered badly from the drought. The varieties Roliza, Tannia Islena, White Eddoe and Tannia Priete showed an advantage under the adverse conditions.

SWEET POTATOES.

The varieties enumerated in the table below were grown for the purpose of supplying cuttings to growers. The yields obtained are small owing to a protracted period of drought, yet the results are interesting in determining the varieties to recommend for planting during such unfavourable conditions.

The demand for cuttings was not so great as the previous year. Attacks of Scarabee (*Cryptorhynchus batatae*) were not severe during the year under report

PLOT EXPERIMENTS.

Variety.	*Rods	Planted.	Return in	Lb.
Bet Weeks	...	...	3	22
Spooner	...	...	3	16
Yellow Red	...	...	3	16
Blue Bell	...	...	3	15
B. Barrel	...	...	3	14
A. 3	...	...	3	36
A. 4	...	...	3	25
A. 5	...	...	3	13
A. 6	...	...	3	14
A. 7	...	...	3	28
Hen and Chicks	...	...	3	14
T. 4	...	...	3	14
A. 9	...	...	3	10
A. 17	...	...	3	10
A. 19	...	...	3	10
A. 21	...	...	3	10
White Gilkes	...	...	3	10
Jim Gage	...	...	3	10

*Local Rod = 10 feet.

FODDER EXPERIMENTS.

Large plots of Elephant grass were grown to meet the planters demand for cuttings.

This grass which possesses such high drought resistant qualities was introduced by the department in the year 1921 and may be now seen growing in practically all districts of the island. Large areas have been planted by several estates.

The demand for cuttings of Guatemala grass (*Tripsacum laxum*) is not nearly so great as for Elephant grass. It, however, withstands drought well and is now under field trial.

Hubam clover (*Melilotus alba*) has been recently introduced for trial.

COTTON.

Cotton selection work was continued at the experiment station on the best types of cotton selected from the progeny rows of the type originally selected from Yepton's estate.

The following tables show results of examinations made. Unfortunately the weather conditions during the year were most unfavourable to plant growth, consequently all types show a falling off lint length, seed weight and lint index.

Surplus seed from the experiments having been planted on several estates, sufficient seed is now obtainable for general distribution throughout the island

COTTON EXPERIMENTS.

UN-SELFED FLOWERS.

No. of Plant.	Average Lint Length Millimetres	Lint Index.	Lint per cent.	Seed Weight.	Available Fibre per cent.	Weak Fibre per cent.	Short. Fibre per cent.
271-18-1-9-1	48.4	3.560	24.000	11.120	38.4	29.2	32.4
271-18-1-9-45	49.6	3.120	24.620	10.420	37.9	31.0	31.1
271-18-1-9-46	49.8	3.980	25.020	10.100	39.7	29.1	31.2
276-2-20-5-25	49.0	3.640	24.510	11.120	38.1	28.4	33.5
276-2-20-5-36	49.0	4.020	24.000	12.420	37.8	26.0	36.2
276-2-20-5-37	48.6	3.910	25.020	10.980	36.4	31.6	32.0
278-2-25-1-12	49.4	3.960	25.020	11.560	35.2	29.8	36.0
278-2-25-1-23	49.8	4.120	26.000	11.120	39.4	29.2	31.4
278-2-25-1-32	49.6	4.020	24.960	12.420	38.8	27.6	33.6

SELF-POLLINATED FLOWERS.

No. of Plant.	Average Lint Length.	Lint Index.	Lint Per cent.	Seed Weight.	Available Fibre per cent.	Weak Fibre per cent.	Short Fibre per cent.
271-18-1-8-4	49.0	4.740	28.100	11.560	34.1	39.5	26.4
271-18-1-8-8	49.8	4.420	27.810	10.860	33.4	38.4	28.2
271-18-1-8-34	49.5	3.980	27.120	11.120	29.5	31.2	39.3
276-2-14-3-30	49.8	4.820	26.820	11.420	39.4	29.2	31.4
276-2-14-3-33	48.4	4.710	26.820	12.510	37.3	38.5	24.2
276-2-14-3-40	49.7	4.620	26.810	11.320	38.6	26.8	34.6
278-2-1-6-33	49.0	4.460	28.400	10.820	38.2	36.4	25.4
278-2-1-6-44	48.2	3.690	25.120	11.700	38.0	37.3	24.7
278-2-1-6-45	50.0	5.120	28.600	11.500	38.1	29.0	32.9
278-2-1-34-6	49.8	3.900	26.000	10.620	39.6	24.1	36.3
278-2-1-34-14	49.4	4.500	26.120	10.800	38.4	26.5	35.1
278-2-1-34-42	48.4	4.100	26.100	10.420	39.4	24.5	36.1
278-2-6-35-18	49.0	3.920	25.420	11.100	39.6	24.1	36.3
278-2-6-35-3	48.8	4.200	26.520	10.200	39.4	28.2	32.4
278-3-6-35-45	49.8	3.920	25.420	11.100	38.4	32.2	39.4

Work in Connection With Insect and Fungus Pests and their Control.

MOSAIC DISEASE OF SUGAR CANE.

Work in connection with the control of this disease may be adjudged as being the principal work of the department during the year. Fields were regularly inspected and affected plants destroyed by burning. It is due to the prompt action taken last year, (see previous report) that very few affected plants were discovered, and these were principally of the variety S. C. 12/4 which had been overlooked during the process of "Rogueing" although one or two cases were observed in the varieties B 6308 and B 3922.

Thanks to the voluntary co-operation of the planters, the efforts of the department to keep this disease under control have met with considerable success. Regular inspections of affected areas are being continued.

Brown Hard Back Beetle (*Lachnosterna Antiguae*) did not appear to be so prevalent. This was especially noticeable on North Sound estate, where a number of plants of *Cordia interrupta*, a host plant of *Tiphia parallela*, are growing remarkable well.

The Moth borer (*Diatraea saccharalis*) and Weevil borer (*Sphenophorus sericeus*) were observed in most cane fields.

COTTON.

The Cotton Worm (*Alabama argillacea*) was easily kept in check by frequently dusting with paris green and lime.

Cotton Stainers (*Dysdercus andrae*) and Leaf Blister Mite (*Eriophyes gossypiella*) were observed in all cotton fields.

Pink Bollworm (*Platyedra gossypiella*) was not so much in evidence during the year, and it would appear that the daily fumigation of cotton seed at the ginnery and the selection and refumigation of seed for planting purposes by the Department is keeping this pest under control.

FUMIGATION OF PLANTS.

All planting material imported into the Presidency is immediately handed to the Department for fumigation or dealt with as considered necessary to prevent the spread of disease.

Summary of Legislation in Antigua Affecting Stock and Crops.

ANIMALS

Swine Epidemic Act 3 of 1893 gives extended power to the Board of Health for the prevention of the spread of diseases among animals.

City of St. John's By Law 13 of 1897. Registration of butchers and inspection of animals for slaughter or meat in market by the Government Veterinary Surgeon and authorises destruction of unwholesome food.

LEGISLATION EFFECTING STOCK.

City of St. John's By Law 13 of 1899. City By Law for the purpose of dealing with cattle diseases.

City of St. John's By Law 2 of 1911 regulates the keeping of animals in municipal areas and inspection etc. of stables in city.

Ordinance 7 of 1913 prohibits the introduction of Mongoose into Barbuda.

Diseases of Animals Ordinance 16 of 1913. Repeals and amends the law relating to contagious diseases among animals. Animals and diseases clearly defined. Inspectors empowered to visit and inspect estate, premises, etc., for diseased animals and to ensure that the necessary provisions are carried out. Suspected animals to be examined by the Veterinary Surgeon and on his (positive) report to be slaughtered.

Cruelty to Animals Amendment Act 3 of 1919. Amends Acts of 1880 and 1916. and provides a fine not exceeding £5 for anyone guilty of cruelty, beating, ill-treating or starving any animal.

Ordinance 8 of 1920. The Diseases of Animals Amendment Ordinance 1920. To amend further the Diseases of Animals Ordinance 1913, states that the Governor may, by Order-in-Council, revoke, amend or vary any Order-in-Council, issued under the provisions of this section.

Ordinance 12 of 1920. Exportation and Importation Prohibition Ordinance 1920. Sanctions prohibition of exportation and importation of any article by Order-in-Council (to include live and dead animals).

Ordinance 10 of 1922. Provides for the taxation of certain animals (donkeys and horses).

Order-in-Council, 11 July 1923 rescinds Order-in-Council of 29 September 1922, prohibiting landing of animals from St. Christopher and Nevis.

MILK.

Adulteration Act 6 of 1884 Provides for the examination of milk and also fine for adulteration in the island of Antigua.

City of St John's By Law 1 of 1917 Provides for the examination of milk and also fines for adulteration of the city of St John's

Ordinance 4 of 1919. Adulteration Ordinance. Amends subsection 1 of Section 24 of the St. John's City Ordinance 1907 and provides that By Laws made for the purpose mentioned in the above Ordinance of 1907, so far as may be necessary for affecting such purpose, be made applicable throughout the Presidency.

By Law 1 of 1922. A By Law ordained by the St. John's City Commissioners to regulate the supply and sale of milk within the City of St. John's.

PLANTS

Plant Protection Act 4 of 1897. Prohibits importation of Coffee or Coffee plants from Ceylon, Mauritius, Reunion, Fiji, Southern India, Sumatra, Java, Natal and other such places as may be proclaimed under the Act. Gives power to prohibit importation of other articles to introduce disease among plants and to seize prohibited importations.

Plant Fumigation Ordinance 5 of 1905. Provides for the fumigation of plants imported into the Presidency.

Proclamation dated January 2 1923. Prohibits the importation into Antigua of Banana plants and parts of Banana plants, including their fruits, from British

PLANT LEGISLATION.

Guiana, Central America, or any island or place in the West Indies, except the islands of Barbados, St. Vincent, Grenada and the other islands of the Colony of the Leeward Islands.

Plant Protection Ordinance 16 of 1923. An Ordinance for the prevention and eradication of Diseases and pests affecting Vegetation.

AGRICULTURAL PRODUCTS.

Ordinance 9 of 1920. Export Duty Ordinance to impose a duty on Sugar Molasses Cotton and Syrup.

Produce Protection Ordinance 20 of 1922. Growers or Sellers of Cacao, Maize, Coco-nuts, Limes and wood of any description to have a license. *Repeals* Agriculture Produce Protection Ordinance 1913.

Order-in-Council November 13, 1922. Adds Pine-apples and Onions to Produce Protection Ordinance 1922.

Ordinance 17 of 1923. An Ordinance to impose a duty on Sugar and certain other articles exported from the Presidency.

COTTON

Cotton Traffic Ordinance 5 of 1906 Regulates local traffic in cotton. No person to sell or purchase cotton without a license.

Proclamation Dated August 4, 1917. Prohibits importation of cotton seed and seed cotton into the Presidency from all countries outside the Leeward Islands, except small quantities of seed specially imported with the permission of the Agricultural Superintendent.

Order-in-Council dated December 9, 1920 under Importation and Exportation Prohibition Ordinance 12 of 1920 prohibits importation from all places of cotton seed, seed cotton, lint, baling cloth, or any article coming into direct contact with cotton produce.

Ordinance 7 of 1922. The Cotton Protection Ordinance 1922. An Ordinance to provide for the protection of Cotton.

SUGAR CANE

Proclamation dated September 28, 1926. Prohibits the importation of cane plants or parts of sugar cane from Trinidad into the Presidency of Antigua on account of Froghopper pests, *Tomaspis* spp.

Order-in-Council dated December 9, 1920. Prohibits importation of cane from all places except under license given by the Governor, (on account of spread of mosaic disease.)

Manufacture of Sugar Act 108 of 1850 Prohibits the use of acetate of lead in manufacture of sugar in the Island.

CITRUS PLANTS

Proclamation dated March 5, 1919. Prohibits the importation into the Presidency of Antigua of Citrus plants and parts of Citrus plants including their fruits from British Guiana, or any island or place in the West Indies other than St. Lucia, Dominica, Montserrat and Grenada.

Proclamation of September 28, 1918. Prohibits importation of rooted plants of Citrus family from United States of America, Jamaica, Cuba, Hayti, and Santo Domingo, unless accompanied by a certificate signed by a responsible inspection officer stating that district from which they originate has not been affected by or has been free for the past two years of Citrus Canker.

Proclamation dated September 6, 1922. Prohibits the importation of Lime plants and parts including their fruits from British Guiana, Trinidad and Dominica

PROGRESS IN CHIEF INDUSTRIES.

COCO-NUTS

Proclamation dated February 27 1919. Prohibits the importation of sprouted coconuts from Trinidad and Grenada, owing to the presence of red ring disease

Proclamation dated October 19, 1923 prohibits importation of growing or sprouted coco-nuts from St. Vincent owing to the existence of red ring disease in St. Vincent.

Progress in The Chief Industries.

According to the Land tax returns for 1923 the following areas were partially under some class of cultivation. viz :—

(1). Areas under 10 acres	...	...	306
(2). Areas from 11—50 acres in extent	...	...	57
(3). Areas from 51—100 acres in extent	...	...	24
(4). Areas from 101—1000 acres in extent	...	...	114
(6). Areas over 1000 acres in extent	...	...	6

These comprise peasant holdings as well as fair sized estates and include pasturage as well as lands under scrub and wood—from which the charcoal locally used is obtained. Very little coal (and in this connexion patent fuel is included) is imported into the Colony and mainly by the Central Factories. All culinary operations are carried out either by means of cord wood and especially wood. charcoal.

As in the past few previous years the weather conditions experienced were subnormal but still on the main more satisfactory than during the past two years The average rainfall of the Island for the past five years being :—

1919	...	...	...	49.36 inches
1920	..	...	...	30.09 inches
1921	...	...	...	30.32 inches
1922	...	...	...	35.14 inches
1923	...	...	...	32.41 inches

Owing to a somewhat more satisfactory rainfall in 1922—the 1923 crop of sugar cane was considerably improved with the result that the tonnage of sugar manufactured was considerably increased this can best be illustrated by a comparison of the tonnage of sugar manufactured by the two Central Factories (Antigua Sugar Factory Ltd. and the Bendals Factory). viz :—

TONS SUGAR.

Year.				Antigua Central Factory.	Bendals Factory.	Total output.
1919	...	...	...	9,739	1,912	11,651 tons
1920	...	...	...	10,638	2,458	11,096 "
1921	...	...	...	8,949	1,516	10,465 "
1922	...	...	...	8,219	1,417	9,636 "
1923	...	...	...	10,318	2,233	12,551 "

It may here be best to quote extracts from the Annual reports for 1923 of the two factories in question.

Antigua Sugar Factory Limited.

"The result of the year has been satisfactory. As mentioned in last Report, the long, severe drought was at length broken in September, 1922, but ever since that date the rainfall continued deficient until October of the present year. In consequence of this the crops of the past season generally were short, and very

SUGAR.—COTTON.

"short in the Popeshead district; but notwithstanding this the Factory, with the aid of outside estates, had a fair supply of cane. The quality was decidedly better than in recent years. The Board has had pleasure in learning that this was largely due to the Estates cooperating with the Factory in endeavouring to secure delivery of the canes as promptly as possible after cutting.

"The Board has for some time contemplated making refined sugar of a good granulated grade suitable for the grocery trade. Trials that had been made elsewhere showed this could be successfully carried out on tropical sugar plantations, and Antigua was favourably placed for the work, as the percentage of fibre in the canes was so high that but little fuel, if any, would be required. The Board accordingly decided to add a refinery to the buildings, and the erection of this has been satisfactorily completed. It was, however, only finished towards the end of the crop, so nothing beyond a small quantity of sugar could be refined. The addition of the refinery should prove a valuable adjunct to the Factory. The Company arranged with its Bankers for a loan towards meeting the cost."

BENDAL'S SUGAR FACTORY.

"As anticipated in last year's Report the results obtained at Bendals proved satisfactory. 2,233 tons of sugar were manufactured, and a reduction in working expenses was effected. A renewed demand for molasses assisted the revenue for the year. Sugar sold realised £29. 14s. 0d. per ton, and Cane Contractors have received 37/3.94 per ton of cane supplied.

"Negotiations for the sale of the Factory to a new Company have been commenced and are still being continued.

"During the year boring operations for water were successfully conducted by the Government on some land of Belvidere Estate adjacent to the Factory, and an arrangement has been concluded whereby in an emergency the supply of water obtained from the wells will be shared equally by the Government and the Factory and the Estate. In years of drought this supply of fresh cold water should prove of inestimable value to the Factory."

Owing to a poor rainfall during the crop season of 1923 it is expected that the out-turn of sugar in 1924 will be considerably reduced and will probably be the lowest on record in the past ten years.

COTTON INDUSTRY.

Owing to various causes and principally unremunerative prices experienced in recent years the Sea Island Cotton industry has seriously depreciated in recent years from 2,508 acres in 1907-08 to 145 in the year under review.

During the season under review the Antigua Cotton Factory ginned and baled 31,662 pounds clean lint and 1000 pounds stained lint during the year 1923, it also crushed for feeding stock 127,454 pounds cotton seed during the same period.

The exports for the year in question were:—

Quarter ending.	No. of Bales.	Weight Pounds.	Estimated value.	Destination.
30th June 1923	101	25,250	£ 2,525	United Kingdom
	20	5000	500 0 0	United States
30th September 1923	Nil.	Nil.	Nil.	Nil.
31st December 1923	129	32,250	3,225 0 0	United Kingdom
31st March 1924	3	750	75 0 0	United Kingdom
	253 bales	63,250 lb.	6,325 0 0	

of which £500 in value were shipped to the United States the balance being forwarded to the United Kingdom.

The interest in this industry is decreasing each year, and unless more satisfactory prices are experienced in this commodity, the time will soon come when it will become extinct. As the British West Indian Islands and to a very minor extent Fiji and the Union of South Africa are the only empire sources of Sea Island Cotton available to the United Kingdom the necessity of the stabilisation of prices becomes apparent. If planters could only know beforehand what prices to expect and given that any such stabilised price is remunerative the establishment of this industry, on a firm basis would be guaranteed. Owing to the attacks of Cotton worm (*Alabama argillacea*) and within recent years pink boll worm (*Geletia gossypiella*) yields have been considerably reduced. Apart from this, drought conditions, unfavourable seasonal weather when the bolls are setting and the necessary restrictions entailed by a close season fixed by law each year materially assist in hampering the industry and increasing the expenses of cultivation.

A stabilised price would enable planters to decide what acreage could conveniently be placed under this crop.

In view of the failure and consequent falling off of the output of Sea Island Cotton, due to pink boll worm and the Mexican boll weevil—from which the British West Indian Colonies are so far fortunately free—there is some hope that the marked for Empire grown Sea Island Cotton may improve. In the meantime the smaller colonies, less favourably situated so far as available capital is concerned, are in a precarious condition and everything points to a further curtailment of the area grown under this crop in 1924 unless prices improve.

Progress in Minor Industries

THE CORN INDUSTRY

Adverse weather conditions were responsible for the failure of this crop and the poor yields obtained were in no way sufficient for the local demand.

The department, in order to encourage peasants to take up this industry, offered best market price for dried, shelled corn.

THE LIME INDUSTRY

This industry is practically at a standstill, plantations having suffered considerably from drought.

THE ONION INDUSTRY.

As in former years, onion seed was imported by the department and sold to growers.

The seed germinated well but the plants on bulbing were attacked by onion thrip and in many instances it did not pay growers to harvest the crop.

The Onion Growers Association showed a loss on the season's working.

THE PINE-APPLE INDUSTRY

This industry was also considerably affected by the dry weather and no shipments of fruits were made by the Pine-apple Growers Association.

Efforts In Connection with Agricultural Progress,

The government having acquired land in the neighbourhood of Fiennes wells and Fiennes dam, fruit orchards were laid out and planted with selected varieties of mango, orange, avocado pear, etc. Every effort is being made to

GENERAL PROGRESS IN AGRICULTURE.

develop a fruit industry and the department is now engaged in propagating and importing good varieties of fruit trees, for general distribution. It is proposed to distribute a large number of plants, free of charge, to allottees of government lands.

ANTIGUA ONION GROWERS ASSOCIATION.

The working of the Association was controlled by a Board of Management consisting of the following gentlemen:—A. P. Cowley, Esq. M.B.E. (Chairman) Hon. A. E. Collens F.I.C. F.C.S., Hon. N. S. Johnston, Hon. R. S. D. Goodwin E. D. Dew, Esq. and F. G. Harcourt, (Hon. Secretary.)

This association has to report a loss on the season's working, as the onion crop although a fairly large one, suffered severely from the ravages of onion thrip.

Although care was taken in selecting the onions for export, some complaints were received that they arrived at their destination in anything but good condition. This was particularly so with those shipped to Canada.

The total number of crates shipped was 4,803, the markets being Halifax, St. Johns N.B., Trinidad, Barbados, Demerara, St. Thomas, Grenada and Bermuda.

Antigua Cotton Growers Association.

The working of the Association was controlled by a Board of Management consisting of the following gentlemen:—A. P. Cowley, M.B.E. Esq., (Chairman), Hon. R. Warneford, Hon. A. E. Collens F.I.C. F.C.S., Hon. N. S. Johnson, E. D. Dew Esq. and F. G. Harcourt Hon. Secretary.

The work of buying seed cotton from the peasants was in the hands of the Agricultural Department.

During the season 36,585 lb of clean seed cotton were purchased at a first payment of 6s. per lb. Thirty-five complete bales of lint were obtained, 15 of which were sold at 1/4 per lb. and 20 at 1/2 per lb.

A final bonus of 1/2c per lb. was paid to peasants for every pound of seed cotton delivered to the Association.

SUGAR CANE EXPERIMENTS.

The sugar cane nurseries were maintained in good order and were a source of interest to planters, who frequently visited the Experiment Station. Field experiments are always conducted on the estates and all varieties under experiments are reaped and carted to the Botanic Station where they are weighed and ground, the cane juice being then forwarded to the Government Laboratory for analytical tests.

These experiments form the subject of a separate annual report, compiled by the Government Chemist and Superintendent of Agriculture of the Leeward Islands.

LAND SETTLEMENT WORK.

It is a pleasure to report that the allottees on Crown Lands continue to keep their lands in very good order.

At Clare Hall Estate 118 allotments, from 1 to 4 acres each, have been made to date, the total value of which is £1,531 1/. 2 allottees have paid the total value of their allotments and have received their title deeds.

At Sawcolts Estate there are 76 allottees holding land to the value of £669 1/9. Several of these allottees have only 3 more instalments to pay to entitle them to own the land.

There are only 8 allotments at Wallings, valued at £138 16/9. There is not such a great demand for land in this district, but every effort is being made by this Department to encourage the peasants to take up the land.

The general appearance of the allotments as a whole is very satisfactory and this land is occupied with useful crops, such as sweet-potatoes, pine-apples, yams, eddoes, etc.

The allotments are visited regularly by the officers of the Department, who give advice as to the growing of crops, control of pest and marketing of produce

The following rules govern the sale of the Lands.

Rules

MADE BY THE GOVERNOR IN COUNCIL FOR THE SALE OF CROWN LANDS IN THE ISLAND OF ANTIGUA.

1 In these Rules the expression "Crown Lands" means the lands known as Sawcolts, Piccadilly, Wallings Estate and Clare Hall but shall not include that portion of Clear Hall lands governed by Regulation made by the Governor-in-Council on the 2nd day of August 1921, under section 5 of the Villages Improvement Ordinance, 1913.

2 Crown Land shall save as hereinafter provided, be surveyed before any allotment of it is made, and the administration and disposal of such lands and of all details connected therewith shall, subject to these rules and to such orders as may be given by the Governor, be entrusted to the "Agricultural Superintendent."

3. In making the survey the following Reserves shall be made.

(1) All ponds and wells, the beds and banks of rivers and of any important stream or tributary, and a space of half a chain around the source and on either bank thereof:

(2) Swamps, exposed ridges and such forests as may be deemed necessary for the purposes of Forest Conservation:

(3) Such land, including sites for Churches, Chapels, Schools or other public purposes, as may be necessary or desirable for the general good:

(4) Such lands as may be necessary for roads or paths to each allotment or group of allotments:

(5) Such lands as may be requisite for villages or common land.

4. The remainder of the Crown land shall be divided into allotments of not less than one and not more than four acres each, and no lot shall be larger than four acres except with the consent of the Governor. In surveying the land for allotment the surveyor shall as far as possible include in one allotment any cultivation of an existing tenant on the land.

5. Each allotment shall be numbered and shall have its number clearly displayed on some part of it.

6. Every corner of each allotment shall be marked by turpentine posts 6 feet in height or stone pillars and the general outline in such manner as the Agricultural Superintendent may decide. The paths and roads which abut each allotment shall be kept free of weeds and bush by the allottee.

RULES GOVERNING SALE OF CROWN LANDS.

7. The Agricultural Superintendent shall keep a Register in a form approved of by the Governor in which shall be recorded :—

- (a) The number and area of each allotment.
- (b) The name of the allottee.
- (c) The date of the allotment
- (d) The sums paid on account of instalments and the dates of such payments.
- (e) Such other particulars as the Governor may prescribe.

8. The Agricultural Superintendent shall then by notice in the Gazette, or in other way he may deem desirable invite applications, (which must be made on printed forms to be obtained from the Botanic Station) for allotments, and on expiration of 14 days from the date of the Notice shall proceed, subject to the Governor's approval, to allot the same in accordance with the following rules : provided however that he shall not make an allotment of land to any person who is already an owner of land without the sanction of the Governor.

9. Allotments should be made in the order of date of application.

10. (i) The Agricultural Superintendent shall, on the payment by the Applicant of an instalment equal to one-tenth part of the purchase of an Allotment issue to the Applicant or Allottee a conditional Permit to occupy the Allotment in respect of which the payment is made.

(ii) The Allottee shall at the expiration of one year from the date of such Permit and at the same date in each succeeding year pay an instalment of the like amount until the purchase price of the Allottee be fully paid and satisfied.

(iii) Notwithstanding anything in this rule contained, an Allottee may

- (a) at the time of allotment pay the purchase price in full, or
- (b) at any time after allotment pay off any instalment or instalments outstanding.

11. The purchase price of an Allotment shall be from £4 to £10 per acre according to the quality of land.

12. An allottee of any allotment shall before accepting his Conditional Permit to copy any allotment, satisfy himself that the area of the allotment is equal to that stated in his Conditional Permit.

13. A certain proportion of land shall be reserved as common land on which each allottee shall be allowed to graze not more than two animals of the following class :—cattle, horses or donkeys, together with two animals of the following classes :—sheep and goats. Any cattle, horses or donkeys above eleven months old shall be reckoned as animals within this provision and similiary any sheep or goat above six months old. Animals grazing on common lands must be securely tethered.

14. (a) Land reserved for a village under Rule 3 shall be called a " Village Lot " and shall be laid out in house spots not exceeding 60 feet square each, with suitable space for streets and cross streets to afford access to such house spots.

(b) For the purpose of valuation, a house spot shall be treated as an allotment and its value fixed at the rate of fifteen shillings per annum.

(c) Every allottee of an allotment shall be entitled to purchase and hold a house spot on the adjacent Village Lot, so long as any remain unsold, on the same condition as an allotment may be purchased and held.

RULES GOVERNING SALE OF CROWN LANDS.

15. House spots may be sold or leased to persons who are not allottees.

16. The condition of tenure of allotment shall be as follows :—

- (a) Every purchaser shall for a period of two years reckoning from the date of allotment reside ordinarily in Antigua. If absent at the time of allotment he shall take up his residence within six months after obtaining a Conditional Permit under these regulations unless the Curator with the approval of the Governor shall otherwise permit.
- (b) No land may be alienated, let or incumbered for a period of ten years from the date of allotment without the consent of the Governor.

The word “alienated” does not refer to or include an involuntary alienation as in the case of descent or bankruptcy; nor in alienation partly involuntary as in the case of a devise by will.

- (c) Every allottee shall beneficially occupy the land to the satisfaction of the Governor.
- (d) The Governor may at any time resume possession of any part or parts of an allotment not exceeding one-tenth of the said allotment for roads, on paying therefor at the same rate per acre as that at which the allotment was originally sold and also for the value of such crops as may be on the selected line of road.
- (e) All instalments shall be punctually paid, on or before the day on which they are due.
- (f) Every purchaser or holder of a house spot shall provide and maintain in good order to the approval of the Curator a latrine or other sanitary convenience for the use of himself and his family.

17. On failure by an allottee of an allotment or house spot to comply with any of the conditions of tenure hereinbefore detailed, the Agricultural Superintendent shall immediately report all the facts of the case to the Governor, who shall enquire as fully as possible into all the circumstances of the default, where upon he may order that the right to such allotment or house spot, and all crops, and all instalments paid and all other rights of the allottee shall be forfeited without any appeal to any Court or may make such order as the circumstances of the case may require.

18. Notice of an order so made shall be served upon the allottee or left at his last known place of abode, and no act of re-entry shall be necessary, and such allotment or house spot shall be at the disposal of the Governor, either to resell then or at any future time.

19. On payment in full by an allottee of the purchase money of an allotment or house spot, he shall be entitled to a grant of the same. Such grant shall be in a form approved by the Governor-in-Council and shall be recorded in the Record of Deeds or in the Register of Titles as the case may be, free of all cost to the allottee, except stamp duty.

20. All former Rules in respect of the Crown land to which these Rules apply are hereby rescinded so far as relate to the said Crown land.

Made by the Governor-in-Council under section 3 of the Crown Lands (Rules), Ordinance, 1917, this 8th day of December 1922.

A. D. W. SKINNER,

Clerk of the Council

DETAILS OF ADMINISTRATION.

GOVERNMENT GRANARY.

31,910 lb. of Cob Corn were shelled and dried from the 10th of May to the 14th June, 1918, when 75.3% of the cob corn was returned as shelled and dried. This is the highest percentage ever obtained.

This small quantity of corn was all that was handled at the Granary during the years.

Details of Administration.

EXPENDITURE AND RECEIPTS.

The expenditure for the year, including Personal Emoluments, amounted to £1068. 3s. 6d. The receipts for sale of was £56. 8s. 5d. and for the sale of Crown Lands £201. 18s. 5d.

STAFF CHANGES.

There were no staff changes during the year.

CORRESPONDENCE.

In addition to the number of minute papers which were dealt with, 715 letters were sent out from the Botanic Station.

OFFICIAL VISITS.

The Superintendent of Agriculture for the Leeward Islands visited the Botanic and Experiment Station on several occasions during the year.

RAINFALL.

AVERAGE RAINFALL, 1874—1923.							AVERAGE MONTHLY RAINFALL, 1923.	
In 1874	the average rainfall	on	41	stations	was	31.16	January	1.90
1875	"	"	40	"	"	28.78		
1876	"	"	36	"	"	41.98	February	1.73
1877	"	"	38	"	"	49.05		
1878	"	"	53	"	"	47.11	March	2.88
1879	"	"	52	"	"	61.54		
1880	"	"	46	"	"	49.68	April	1.80
1881	"	"	44	"	"	53.75		
1882	"	"	45	"	"	33.04	May	0.40
1883	"	"	56	"	"	55.51		
1884	"	"	56	"	"	43.98	June	3.39
1885	"	"	53	"	"	43.39		
1886	"	"	55	"	"	47.78	July	1.73
1887	"	"	50	"	"	43.68		
1888	"	"	47	"	"	44.23	August	3.21
1889	"	"	50	"	"	73.39		
1890	"	"	45	"	"	33.00	September	2.59
1891	"	"	45	"	"	50.01		
1892	"	"	53	"	"	33.43	October	8.57
1893	"	"	54	"	"	38.69		
1894	"	"	68	"	"	38.83	November	2.11
1895	"	"	69	"	"	52.91		
1896	"	"	56	"	"	59.85	December	2.10
1897	"	"	54	"	"	39.67		
1898	"	"	66	"	"	48.85		32.41
1899	"	"	63	"	"	47.50		
1900	"	"	61	"	"	36.95		
1901	"	"	65	"	"	57.51		
1902	"	"	71	"	"	58.80		
1903	"	"	68	"	"	43.68		
1904	"	"	70	"	"	37.01		
1905	"	"	68	"	"	31.46		
1906	"	"	66	"	"	53.93		
1907	"	"	70	"	"	43.45		
1908	"	"	72	"	"	43.79		
1909	"	"	70	"	"	45.15		
1910	"	"	70	"	"	34.77		
1911	"	"	72	"	"	36.17		
1912	"	"	72	"	"	32.20		
1913	"	"	73	"	"	42.76		
1914	"	"	72	"	"	36.86		
1915	"	"	75	"	"	56.14		
1916	"	"	74	"	"	58.23		
1917	"	"	70	"	"	36.62		
1918	"	"	70	"	"	37.87		
1919	"	"	70	"	"	49.36		
1920	"	"	70	"	"	30.09		
1921	"	"	74	"	"	30.32		
1922	"	"	70	"	"	35.14		
1923	"	"	68	"	"	32.41		

METEOROLOGICAL SUMMARY, 1923, KEPT AT THE BOTANIC STATION, ANTIGUA.

19

Month	Thermometer.						Barometer Reading.		Wind.			Barometer Corrected*		Thermometer.	
	Dry.		Wet.		Relative Humidity.		Maximum.	Minimum.	Miles run.	Average.		Highest	Lowest	Highest	Lowest
	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.				Per day.	Per hr.				
January	78.2	79.2	72.9	73.9	74.6	74.6	81.4	69.9	4975	160.4	6.5	30.101	29.886	84	66
February	78.4	79.8	74.5	75.2	80.6	77.6	81.7	70.3	4425	158.0	7.2	30.194	29.973	83	68
March	77.4	80.3	74.2	74.5	83.7	78.1	81.8	69.7	6990	225.5	8.3	30.165	29.990	83	68
April	79.5	81.0	74.8	76.5	77.6	74.4	83.0	70.9	4925	158.9	6.6	30.118	29.887	85	68
May	81.4	83.3	76.4	78.1	76.0	75.7	85.8	73.5	4455	138.2	5.9	30.101	29.877	89	70
June	82.0	82.6	78.8	79.6	83.9	82.0	85.9	74.2	6210	207.0	8.5	30.163	29.930	88	69
July	83.2	83.6	78.6	78.0	78.5	74.6	86.4	75.1	7595	244.4	8.5	30.085	29.937	89	72
August	83.7	85.1	78.5	79.0	75.8	72.0	87.1	74.9	5775	186.3	7.6	30.086	29.877	90	72
September	83.7	85.0	78.8	79.6	76.6	75.0	87.9	75.6	4030	138.9	5.7	30.087	29.826	93	72
October	83.6	84.1	77.3	77.3	71.3	70.6	87.6	73.7	3390	109.4	4.7	30.050	29.731	91	70
November	82.4	83.5	76.6	76.9	72.9	70.1	85.3	72.8	2695	89.8	3.2	30.009	29.825	90	71
December	79.8	80.6	73.4	74.3	71.3	70.5	82.8	72.5	5100	161.5	6.9	30.139	29.822	86	70
Means for the year									60565						
	81.1	82.3	76.2	77.0	77.0	74.6	84.7	72.8		165.1	6.6				

Highest Maximum Temperature 93° on September 19. Lowest Minimum Temperature 66° on January 28. Highest Barometer (corrected) 30.194 on February 6. Lowest Barometer (corrected) 29.731 on October 23. Greatest Rainfall in 24 hours 3.99 on October 15. Greatest number of miles run by wind in 24 hours 375 on August 21. Earthquakes recorded 6; on March 20, May 10, 17 and 25 September, 28 and December 31. Thunderstorms 4; on June 6, August 18, October 15 and 23. *For Temperature Altitude and Latitude.



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- Volume XVIII, Nos, 1, 2, 3, and 4—Containing Tropical Agricultural College Committee's Report and Papers on Miscellaneous Subjects.

PAMPHLET SERIES.

The following list gives particulars of the chief pamphlets issued by the Imperial Department of Agriculture that are still available :—

SUGAR INDUSTRY.

- Seedling and other Canes at Barbados, 1900-4.
- Seedling Canes and Manurial Experiments at Barbados.
- | | | |
|--------------------|--------------------|------------------|
| in 1903-5, No. 40. | in 1904-6, No. 44. | } price 6d each, |
| in 1905-7, No. 49. | in 1906-8, No. 59. | |
| in 1907-9, No. 62. | in 1908-10 No. 66. | |
- Seedling and other Canes in the Leeward Islands.
- | | | |
|--------------------|--------------------|-------------------|
| in 1900-1, No. 12. | in 1901-2, No. 20. | } price 2d. each. |
| in 1902-3, No. 27. | | |
| in 1903-4, No. 33. | in 1904-5, No. 36. | } price 4d. each. |
| in 1905-6, No. 46. | in 1906-7, No. 50. | |
| in 1907-8, No. 56. | | |
- in 1908-9, No. 63. in 1908-10, No. 67—price 6d. each
- Manurial Experiments with Sugar-cane in the Leeward Islands.
- | | | |
|--------------------|---------------------|-------------------|
| in 1902-3, No. 30. | in 1903-4, No. 39. | } price 4d. each, |
| in 1904-5, No. 42. | in 1905-6, No. 47. | |
| in 1906-7, No. 51. | in 1907-8, No. 57. | |
| in 1908-9, No. 64. | in 1909-10, No. 68. | |
- Sugar-cane Experiments in the Leeward Islands.
- in 1910-11 price 1s. ; price 1s.

SCALE INSECTS.

- Scale insects of the Lesser Antilles Part I. No. 7 price 4d.
- Part II No. 22. price. 4d.

GENERAL.

- (43) Cotton Seed and Cotton-cake-meal on West Indian Plantations. Price 2d.
- (52) Hints for School Gardens. Price 6d.
- (60) Cotton Gins. How to erect and work them. Price 4d.
- (61) The Grafting of Cacao. Price 4d.
- (65) Hints for School Gardens. Fourth Edition. Price 4d.
- (71) Insect Pests of the Lesser Antilles. Price 3d.
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- (78) Onion Cultivation Price 3d.
- (79) Diseases of Lime Trees in Forest Districts. Price 3d.
- (80) Hints to Settlers. St. Lucia. Price 6d.
- (81) Agricultural and Economic Resources of St Lucia. Price 3d.

The above will be supplied post free for an additional charge of 1d.
for the pamphlets marked 2d., 1d. for those marked 4d. and 1d. for Nos. 40
41, 44, 49 45, 59 62, 63, 67, 73, 74 and 75 2d for No. 72 and 4d. for No. 71.

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